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NATURAL HISTORY NOTES FROM JIGALONG, NORTH-WESTERN AUSTRALIA

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III. THE BIRDS

INTRODUCTION

Slater (*W.A. Nat.*, 7: 35) has given an account of the breeding seasons in the East Kimberleys during the years 1955-56, while Robinson (*W.A. Nat.*, 4: 187) and Carnaby (*W.A. Nat.*, 4: 149) have given quantitative data gathered over long periods in various parts of the State including the North-West. These data have been analysed by Serventy and Marshall (*Emu*, 57: 120, Fig. 4).

A further contribution of breeding at Jigalong (Lat. 23° 24′ S., Long. 120° 46′ E) in the little-documented desert region of Western Australia, to compare with the above-mentioned papers, is given here.

All records were made during the period February 10 to December 14, 1959.

DESCRIPTION OF THE AREA

The area has been described in the first article of this series (*W.A. Nat.*, 7: 122) and the only other point to be noticed is the presence of a small number of permanent and semi-permanent rock holes in the breakaway country to the east providing a reliable source of water for the fauna in their vicinity. Three were visited, being known by their native names from north to south as Mantjin, Ngutjapungkanu and Ngiyanunya.

CLIMATE

Some general data were given in the introductory article and the present more detailed information has been limited to rainfall as this is more specific to the conditions met with in the 1959 seasons.

Rainfall for the past 19 years (Fig. 1) has been extremely varied but shows regular cyclic patterns of a good year followed by a number of dry years. Reference to Table 1, in which totals for individual months in a series of three successive "good" years and three successive "bad" years are given, shows that regular rainfall can be expected in the summer and winter of each year, but that generally there is little or no rain in the spring months, August to October.

TABLE 1.—RAINFALL IN POINTS FOR THREE SUCCESSIVE GOOD AND THREE SUCCESSIVE DRY YEARS.

	Good Years			Dry Years		
	1941	1942	1943	1957	1958	1959
January	17	1530	223	73	15	35
February	143	320	220	79	13	61
March	256	762	207	—	46	41
April	52	18	319	—	—	48
May	113	406	2	11	31	36
June	—	205	5	149	48	93
July	131	12	224	20	144	149
August	10	—	25	—	75	—
September	8	—	—	—	25	—
October	27	—	39	—	—	—
November	197	67	35	12	188	—
December	189	15	146	192	36	135
Totals	1143	3435	1145	536	621	598

Conditions throughout 1959 were extremely dry and as will be seen from Fig. 1 the season had been preceded by a three year period in which low rainfall occurred.

This drought and the drought conditions in the previous cyclic troughs coupled with overgrazing by stock on the under-story plants and low tree branches has had a marked effect upon the vegetation. Sheep, cattle and goats are run on Jigalong. Goats being voracious feeders do the most damage but as they are usually run in small flocks each animal probably contributes equally to the denudation. Mulga *(Acacia aneura)*, the dominant tree of the plain country, is gradually thinning out. The trees which die are quickly eaten out by termites and young trees have no chance to establish themselves under the combined handicaps of the unreliable rainfall and grazing. Although rainfall totals seem sufficient

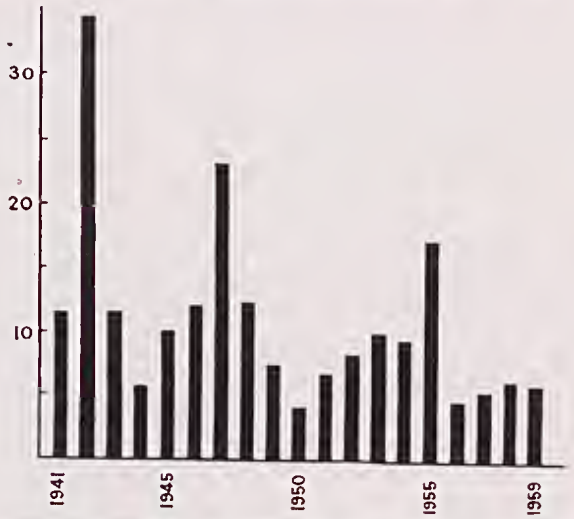

Fig. 1.—Annual rainfall at Jigalong for the years 1941 to 1959, recorded in inches (100 points = 1 inch).

to support the continued regeneration of species it must be remembered that most of the rain comes in thunderstorms which are extremely heavy but of short duration. These saturate the ground quickly and the excess water soon runs off into clay pans or creek drainage systems.

Plants which become established after germination during these storms do well for the first few days but with the disappearance of the ground water they quickly become scorched and die. This was particularly noticed with the few native grasses which germinated, the leaves rarely growing to more than a few inches before their death. Those that survived were soon eaten by the stock.

This competition with the stock probably accounts for the disappearance of the large tracts of native grasses which were common in the early pastoral days and their replacement by the hardy unpalatable "spinifex" *(Triodia)*. Talawana, a station 60 miles north-east of Jigalong shows this succession more markedly than Jigalong itself. Several stations nearby have been abandoned, the closest to Jigalong being Balfour Downs, Murramunda and Cockedina.

BREEDING

Carnaby and Robinson, reporting from areas closer to the coast, have both shown an extended breeding period commencing after summer rains and continuing into spring, with a drop during late autumn and early winter.

In their analysis of these North-West data Serventy and Marshall *Emu*, 57: 122) have correlated the lower level of winter breeding with the low temperatures, particularly during the night, which are characteristic of the inland regions at this time of the year. They further state, "In unfavourable years one or both peaks can be eliminated by the absence of rain and its effects."

Confirmation of this statement comes from the fact that no evidence of summer and autumn breeding was noted at Jigalong during 1959 after a season in which there were no effective summer rains. Rains commenced in the period November 25 to 28, 1958, when a total of 188 points fell, but between that time and my arrival rain fell in sufficient quantity to be recorded on only three additional dates. Although I was not present during the mid-summer months of the 1958-59 season I felt that breeding if it had taken place, could have been detected by the following evidence: firstly, allowing for reaction time after the November rains, incubation and fledging periods, species would still be feeding their young; and, secondly, the presence of young birds in juvenile plumage. No such evidence was noted.

Plotting the number of species nesting, the dates adjusted as near as possible to the presence of eggs in the nest, with the rainfall for the year, it will be seen (Fig. 2) that the main nesting season was in the dry months, August to October, after the winter rains, and that only one species, the Australian Dotterel, was actually found breeding during the rainy period. Rainfall, therefore, appeared to act as the initial trigger to stimulate the reproductive cycle.

Comparison with observations made in a wet year especially after good summer rains would probably clarify the matter.

Another factor to be taken into consideration is the amount of food available at this time of the year. During these warm dry spring months there was a noticeable increase in the numbers of caterpillars on the ground and butterflies in the air. A favourite game of the native children was now "chase the butterfly" and no doubt the birds were also just as active. Other insect life was probably relatively more abundant too, providing insectivorous birds with a reliable source of food.

It was found during the non-breeding season that ants and termites were a major food item for some birds in the area; two instances will illustrate this: 1. A White-plumed Honeyeater shot in June when display flights were becoming common, had its stomach crammed full with the remains of the ant common on the River Gum *(Eucalyptus camaldulensis)*, its preferred habitat. Its testes were undeveloped. 2. Again in June a small party of Black-faced Wood-Swallows was seen feeding intently at one spot on the ground for a number of minutes. When examined later an escape hole from a termite colony was found at this spot, with individual termites still near the exit.

Seed eaters such as finches, on the other hand, faced more direct competition with the stock and it was only around the permanent rock holes that their presence could be relied upon.

Table 2 gives details of the species found nesting during 1959.

HABITATS

The area studied, about 30 square miles and shown on the accompanying map (Fig. 3) can be divided into the following five habitats although no true boundaries can be made between each:

1. Creek. A comparatively dense cover of River Gums, two species of *Acacia*, with an occasional Sandalwood *(Santalum spicatum)* and *Pittosporum phillyraeoides* lining the banks. At places a lower layer of shrubby *Acacia* and *Eremophila* is present. The

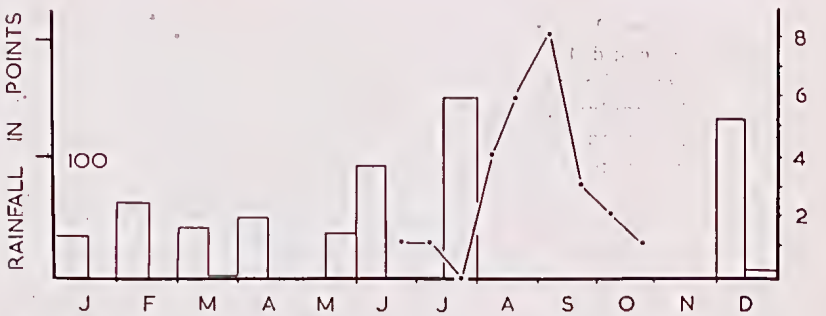

Fig. 2.—The number of species breeding in each half-month (line graph) plotted with the rainfall in the same periods (histograms).

cover extends to varying widths from the creek about 50 yards being the average. This habitat frequently runs into:

2. Mulga Flats. Sparsely vegetated red sand flats with openly foliated Mulga the dominant tree. The soil is loosely bound by a variety of smaller shrubs, mainly *Cassia desolata* and scattered *Eremophila.*

3. Gibber Plain. Wide plains covered by small stones, interspersed with areas of "spinifex" *(Triodia irritans.)*

4. Crab-hole Country. Clay-pan flats to which surface water flows in the absence of creek beds. This is typified by a very rough surface formed by water eroding the soil around grass roots and leaving hard clumps up to twelve inches high. Large shallow ephemeral pools of water lined mainly by *Pittosporum, Acacia tetragonophylla* and a white barked Eucalypt are characteristic of these flats.

5. Breakaway Country. Rugged sandstone and quartzite hills covered with irregularly sized boulders and spinifex, with an occasional Eucalypt on the slopes and *Acacia* in the valleys.

Using the above numbers as a key to the preferred habitats a detailed list of the birds follows, the species being divided into the following categories: Permanent residents; nomadic, depending upon the availability of surface water; nomadic, of unreliable occurrence; migratory; unclassified (insufficient data, mostly single records). Breeding birds are marked with an asterisk.

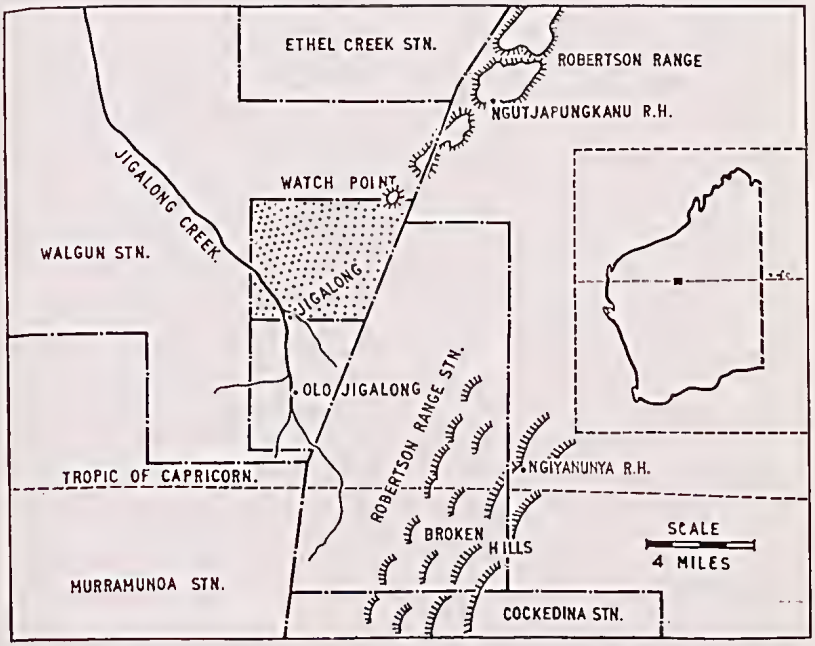

Fig. 3.—Jigalong and its environs (inset, position of Jigalong on a State map).

For relevant scientific names reference should be made to "A Handbook of the Birds of Western Australia," Serventy and Whittell, Second Edition, 1951.

TABLE 2.—BREEDING DATA FROM JIGALONG. 1959

Australian Dotterel	23.vi; 3e(1)* 28.vi; 3e(1) 11.vii; 3e(1) 18.viii; 3e(1)
Yellow-throated Miner	12.viii; 2e(1)
Pipit	13.viii; 2e(1) 14.viii; 3e(1) 29.viii; 2yle(1)
Crimson Chat	18.viii; 2e(1)
Galah	29.viii; 5e(1)4e(2)3e(2) 30.viii; fresh nest 5.ix; 4e(3)3e(2) 26.ix; fresh nest 1.x; 60 young taken by natives
Twenty-eight Parrot	29.viii; large young 5.ix; 4e(1) 3y(1) ?(1)
Tree-Martin	29.viii; ?(1)
Kestrel	3.ix; 3e(1)
Crested Pigeon	5.ix; 2e(1)
Cockatiel	5.ix; fresh nest
Willy Wagtail	5.ix; fresh nest
White-plumed Honeyeater	5.ix; 3e(1) ?(2)
Maned Goose	14.ix; 4y(1)
Ground Cuckoo-Shrike	18.ix; 1e(1)
Crow	26.ix; 4e(1)
Blue-and-white Wren	10.x; 2e(1)
Red-backed Kingfisher	14.x; 2e(1)
Black-faced Cuckoo-Shrike	14.x; 3e(1) 26.x; 3e(1)

1. Permanent Residents

Emu. 1, 2, 3, 4, 5.
Common Bronzewing. 1, 4.
*Crested Pigeon. 1, 4.
Bustard. 1, 2.
Wedge-tailed Eagle. 1, 2, 3.
Brown Hawk. 1, 2.
*Kestrel. 2.
Boobook Owl. 1.
Little Corella. 1, 2.
*Galah. 1, 2, 5.
*Twenty-eight Parrot. 1.
*Red-backed Kingfisher. 1, 2, 4.
Rainbow-bird. 1.
*Willy Wagtail. 1.
Red-capped Robin. 2, 4.
Hooded Robin. 2.
Rufous Whistler. 1, 4.
Western Shrike-Thrush. 1.
Crested Bell-bird. 2.
Magpie Lark. 1.
*Black-faced Cuckoo-Shrike. 1, 2.
Cinnamon Quail-Thrush. 1, 2.
Grey-crowned Babbler. 1.
*Crimson Chat. 2, 4.
Orange Chat. 2, 4.
Chestnut-tailed Thornbill. 1, 2.
*Blue-and-white Wren. 1.
Variegated Wren. 1, 2.
Black-faced Wood-Swallow. 1, 2.
Little Wood-Swallow. 5.
Mistletoe-bird. 1.
Red-browed Diamond-bird. 1.
Red-tipped Diamond-bird. 1.
White-fronted Honeyeater. 1.
Brown Honeyeater. 1.
Singing Honeyeater. 1, 4.
*White-plumed Honeyeater. 1.
*Yellow-throated Miner. 1.
Spiny-cheeked Honeyeater. 1.
*Pipit. 2, 4.
Zebra Finch. 1, 2, 5.
*Crow. 1, 2.
Little Crow. 1, 2.
Grey Butcher-bird. 1, 2.
Black-throated Butcher-bird. 1, 2.

* These abbreviations read as follows:—
Nesting was observed on June 23, one nest with three eggs being found on that date. The month, in roman numerals, is preceded by the day of the month.
Young birds are indicated by the letter y and eggs by the letter e.

2. Nomadic, depending upon availability of surface water.

Diamond Dove. Summer only. 1, 2.

Black-tailed Native Hen. Summer only. 1, 4.

White Egret. Winter. Injured bird at Walgun. 1, 4.

White-faced Heron. Summer, rare in winter. 1, 4.

White-necked Heron. Summer, rare in winter. 1, 4.

Mountain Duck. Summer and winter. 1, 4.

Grey Teal. Summer and winter. 1, 4.

Pink-eared Duck. Summer and winter. 1, 4.

*Maned Goose. Summer and winter. 1, 4.

Black Duck. Summer only. 1, 4.

3. Nomadic, of unreliable occurrence.

*Cockatiel. 1.

Budgerygah. 1, 5. Many small flocks were seen flying north in summer, the only other record being in October.

Masked Wood-Swallow. 1, 2. An irregular visitor occurring in loose high flying flocks, attention being drawn to them by their calls.

*Ground Cuckoo-Shrike. 2. One pair present during spring made an abortive attempt to nest. A hide erected nearby attracted a, probably Corvid, predator.

4. Migratory.

*Australian Dotterel. 3.

Fork-tailed Kite. 2. Both these species have been provisionally placed in this category. The sudden arrival in winter months and equally sudden departure during spring of both speeles in large numbers, seems to indicate that they are migratory. Both birds are regarded as winter visitors by nearby pastoralists.

Fork-tailed Swift. One record only, a loose flock of about 20 birds seen on March 1 during humid weather.

Pallid Cuckoo. 1, 2
Bronze Cuckoo (? sp.). 1, 2 } The status of these birds is uncertain. Both were seen on February 28, then the Pallid again on June 16 and the Bronze Cuckoo on July 7. The Bronze Cuckoo was not heard calling and though seen the species was not determined.

*Tree-Martin. 1. Present from May to August.

5. Unclassified.

Sparrow Hawk. ♂ June 13.

Little Eagle, March 8, September 5.

Whistling Eagle. July 15.

Bourke Parrot. February 2.

White-backed Swallow. May 24, June 14, June 24, November 11.

White-winged Trillier. September 26.

Weebill. April 14.

Fairy Martin. Old nests found but birds not seen.

Banded Whiteface. December 7.

Redthroat. May 30.

Rufous Field-Wren. A number of occasions during June and July. Habitat 3.

Black Honeyeater. June 13, June 27.

Pied Honeyeater. June 22, July 4, July 28.

Yellow-fronted Honeyeater. February 28, March 27.

Black Swan. Heard flying south during the evening of May 24.

Black-capped Sittella. September 26.

The following birds were not seen but are known to the natives in the area:

Black-fronted Dotterel
Southern Stone Curlew
Tawny Frogmouth

Some information on bird movements is available from recoveries of Corvids banded at Jigalong during 1959.

The trapping programme was started in June using a trap with a roof entrance and a funnel on the ground. By November when trapping was discontinued 63 birds had been trapped, of which 61 were Little Crows and 2 were Crows.

Three recoveries of Little Crows have occurred to date:

1. No. 100-04124, banded on June 16 and recovered at Walgun on June 28, 10 miles north.
2. No. 100-04119, banded on June 14 and recovered at Mt. Weld Station near Laverton on November 11, 390 miles S.S.E.
3. No. 100-04130, banded on June 30 and recovered 4 miles south of Menzies on April 29, 1960, 435 miles S.

In addition eleven birds were retrapped in the same trap as they were banded from, the longest time interval being shown by no. 100-04135, banded on June 23 and retrapped on October 5.

ABLEPHARUS BOUTONII CLARUS, A NEW SKINK FROM THE ESPERANCE DISTRICT, WESTERN AUSTRALIA

By G. M. STORR, Department of Zoology, University of Western Australia.

Probably the most widely distributed of all lizards, *Ablepharus boutonii*, ranges from coastal East Africa, through the archipelagoes of the Western Indian Ocean to the Lesser Sundas, Moluccas, New Guinea, Australia and most islands in the tropical Pacific. In his monograph of the species, Mertens (1931) described or redefined 36 geographical races, allotting three of them to continental Australia, *viz. metallicus* Boulenger for the centre and northwest, *virgatus* Jarman for the north-east (from Cape York to Rockhampton) and *plagiocephalus* Coeteau for the south.

Coeteau's name, like the later *Ablepharus peronii* of Duméril and Bibron, is based on the manuscript description by Péron of a skink from "Tasmania and Shark Bay." Since no form of the species occurs in Tasmania, Mertens restricted the name *plagiocephalus* to the Australian mainland. He gave the distribution of the race as the "whole of southern Australia from New South